



Water testing performed in 2009



**CHESTERFIELD COUNTY
DEPARTMENT OF UTILITIES**

Providing a **FIRST CHOICE**
community through excellence
in Public Service

PWS ID#: VA4041845

Meeting the Challenge

We are proud to present to you our annual water-quality report. This edition covers all testing performed between Jan. 1 and Dec. 31, 2009. We dedicate ourselves to producing drinking water that meets all state and federal standards. We continually strive to adopt new and better methods for delivering the best quality drinking water to you. As new challenges to drinking-water safety emerge, we remain vigilant in meeting the challenges of source-water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune-system disorders, some elderly, and infants, may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. Environmental Protection Agency and Centers for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at 800-426-4791.



Source Water Assessment

The Safe Drinking Water Act mandated that source-water assessments be performed by the Virginia Department of Health for all public water sources, including those servicing Chesterfield County. During 2001, the Virginia Department of Health conducted a source-water assessment of our system.

Using criteria developed by the state in its U.S. EPA-approved Source Water Assessment Program, the Swift Creek Reservoir, the James River and Lake Chesdin were determined to be of high susceptibility to contamination. The assessment reports consist of maps showing the source-water assessment area, an inventory of known land-use activities of concern, and documentation of any known contamination within the last five years from the date of the assessment. These reports are available by contacting the quality assurance coordinator at 804-744-1360 or the Chesterfield Utilities Department at P.O. Box 608, Chesterfield, VA 23832.

Each month, laboratory staff collect water samples from Swift Creek Reservoir. This data may be obtained from the water quality manager for Chesterfield County by calling 804-768-7435.

Questions?

For more information about this report, or to ask questions relating to your drinking water, please call the quality assurance coordinator at 804-744-1360.



What's My Water Source?

Chesterfield County Utilities Department customers are fortunate because their water is supplied by three sources. These sources assure adequate water supply well into the 21st century. The three sources that supply Chesterfield County's potable water are Swift Creek Reservoir, Lake Chesdin and the James River. An average of 36.7 million gallons of water per day, or mgd, was treated and delivered from these three water supplies in 2009.

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The Department of Utilities owns and operates the Addison-Evans Water Production and Laboratory Facility, which is located on Swift Creek Reservoir. This facility has a capacity of 12 mgd and produced an average of 8.1 mgd. The county is one of five members of the Appomattox River Water Authority, or ARWA. The ARWA is located on the northern side of Lake Chesdin. The county has a daily allocation of 66.54 mgd from the authority and received an average of 19.2 mgd from the facility. The third water source is the James River, which supplies the treatment facility owned and operated by the city of Richmond. This plant supplies water to the city of Richmond and to the counties of Chesterfield, Goochland, Hanover and Henrico. The county's contract with the city assures an available supply of 27 mgd. An average of 9.4 mgd of drinking water was received from the James River in 2009.

Lead and Drinking Water

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Chesterfield County Utilities Department is responsible for providing high-quality drinking water, but we cannot control the variety of materials used in plumbing components. When water has been sitting for several hours, the potential for lead exposure can be minimized by flushing the tap for 30 seconds to 2 minutes before using water for drinking or cooking. Customers concerned about lead in their water may wish to have their water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at 800-426-4791 or at www.epa.gov/safewater/lead.

Substances That Could Be in Water Sources

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, and in some cases radioactive material, and substances resulting from the presence of animals or from human activity. Substances that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations or wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming;

Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses;

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and may also come from gas stations, urban stormwater runoff and septic systems;

Radioactive Contaminants, which can occur naturally or may be the result of oil and gas production and mining activities.

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at 800-426-4791.

Cross-Connections and Backflow

Cross-connections are interconnections between a drinking-water system and a potentially hazardous source, such as fertilizers, pesticides or sewage. To prevent such occurrences, mechanical safety devices called "backflow preventers" must be installed and routinely maintained. For more detailed information, visit www.chesterfield.gov/utilities.

Sampling Results

During the past year, water delivered to homes or businesses complied with all state and federal primary drinking-water regulations. The table below shows what substances were detected in drinking water during 2009. Although all of the substances listed are below the maximum contaminant limit set by the U.S. EPA, we believe it is important that customers know exactly what was detected and how much of the substance was present in the water. The state requires Chesterfield County Utilities Department to monitor for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

REGULATED SUBSTANCES											
				ARWA		Addison-Evans		Richmond			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Alpha Emitters (pCi/L)	2002	15	0	ND	NA	0.2	0.2–0.2	0.3	0.3–0.3	No	Erosion of natural deposits
Beta/Photon Emitters ¹ (pCi/L)	2002	50	0	1.9	1.9–1.9	2.8	2.8–2.8	1.9	1.9–1.9	No	Decay of natural and man-made deposits
Chloramines ² (ppm)	2009	[4]	[4]	2.92	1.3–4.3	2.92	1.3–4.3	2.92	1.3–4.3	No	Water additive used to control microbes
Chlorite (ppm)	2009	1	0.8	0.48	ND–0.48	ND	NA	ND	NA	No	Byproduct of drinking-water disinfection
Combined Radium (pCi/L)	2002	5	0	0.6	0.6–0.6	0.3	0.3–0.3	0.2	0.2–0.2	No	Erosion of natural deposits
Fluoride (ppm)	2009	4	4	1.14	ND–1.14	1.27	0.80–1.27	1.26	ND–1.26	No	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories
Haloacetic Acids [HAA] (ppb)	2009	60	NA	19.1	11–26	21.1	14–28	27.9	20–36	No	Byproduct of drinking-water disinfection

Nitrate (ppm)	2009	10	10	0.09	0.09–0.09	ND	NA	0.33	0.33–0.33	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2009	80	NA	30.2	14–50	33.6	18–61	23.5	17–36	No	Byproduct of drinking-water chlorination
Total Coliform Bacteria (% positive samples)	2009	5% of monthly samples are positive	0	ND	NA	ND	NA	1	NA	No	Naturally present in the environment
Total Organic Carbon (removal ratio)	2009	TT	NA	1.23	1.08–1.43	1.35	1.23–1.39	1.6	1.2–2.0	No	Naturally present in the environment
Turbidity ³ (NTU)	2009	TT	NA	0.20	0.01–0.20	0.32	0.02–0.32	0.16	ND–0.16	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2009	TT	NA	100	NA	99.99	NA	100	NA	No	Soil runoff

Tap water samples were collected from 50 sample sites throughout the community in 2007. (Lead was not detected in the 90th percentile.)											
				ARWA		Addison-Evans		Richmond			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH %TILE)	SITES ABOVE AL/TOTAL SITES	AMOUNT DETECTED (90TH %TILE)	SITES ABOVE AL/TOTAL SITES	AMOUNT DETECTED (90TH %TILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2007	1.3	1.3	0.209	0/50	0.108	0/50	0.088	0/50	No	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (ppb)	2007	15	0	ND	NA	ND	NA	ND	NA	No	Corrosion of household plumbing systems; erosion of natural deposits

SECONDARY SUBSTANCES											
					ARWA		Addison-Evans		Richmond		
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Sulfate (ppm)	2009	250	NA	28.4	28.4–28.4	35.8	35.8–35.8	38.4	38.4–38.4	No	Runoff/ leaching from natural deposits; industrial wastes

UNREGULATED SUBSTANCES								
		ARWA		Addison-Evans		Richmond		
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromodichloromethane (ppb)	2009	4.8	2.4–9.1	6.2	3.2–10	3.3	2.2–5.5	Byproduct of drinking-water disinfection
Chlorodibromomethane (ppb)	2009	0.6	ND–1.5	0.8	ND–1.7	0.35	ND–0.7	Byproduct of drinking-water disinfection
Chloroform (ppb)	2009	23.2	11–39	26.3	15–48	0.16	14–30	Byproduct of drinking-water disinfection

¹The MCL for beta particles is 4 mrem/year. The U.S. EPA considers 50 pCi/L to be the level of concern for beta particles.

²Chloramine MRDL and MRDLG compliance is regulated by calculating a running annual average. The County's distribution system's running annual average was 2.92 ppm (in compliance with the MRDL and MRDLG). Every month 150 measurements of total chlorine are performed in the distribution system and used in this calculation. Note that individual measurements are allowed by regulation to exceed MRDL and MRDLG, as the highest measurements in 2009 were above 4 ppm.

³Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

Definitions

AL (Action Level): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for

control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal):

The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: Not applicable

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

NTU (Nephelometric Turbidity

Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

pCi/L (picocuries per liter): A measure of radioactivity.

ppb (parts per billion): One part substance per billion parts water

(or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

removal ratio: A ratio between the percentage of a substance actually removed to the percentage of the substance required to be removed.

TT (Treatment Technique):

A required process intended to reduce the level of a contaminant in drinking water.